

Division 3. Air Resources Board

Chapter 1. Motor Vehicle Pollution Control Devices

Article 2. Approval of Motor Vehicle Pollution Control Devices (New Vehicles)

§ 1962. Zero-Emission Vehicle Standards for 2003 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.

(a) *ZEV Emission Standard.* The Executive Officer shall certify new 2003 and subsequent model passenger cars, light-duty trucks and medium-duty vehicles as ZEVs if the vehicles produce zero exhaust emissions of any criteria pollutant (or precursor pollutant) under any and all possible operational modes and conditions. Incorporation of a fuel-fired heater shall not preclude a vehicle from being certified as a ZEV provided: (1) the fuel-fired heater cannot be operated at ambient temperatures above 40oF, (2) the heater is demonstrated to have zero fuel evaporative emissions under any and all possible operational modes and conditions, and (3) the emissions of any pollutant from the fuel-fired heater when operated at an ambient temperature between 68oF and 86oF do not exceed the emission standard for that pollutant for a ULEV under section 1961(a)(1).

A vehicle that would meet the emissions standards for a ZEV except that it uses a fuel-fired heater that can be operated at ambient temperatures above 40oF, that cannot be demonstrated to have zero fuel evaporative emissions under any and all possible operation modes and conditions, or that has emissions of any pollutant exceeding the emission standard for that pollutant for a ULEV under section 1961(a)(1), shall be certified based on the emission level of the fuel-fired heater.

(b) *Percentage ZEV Requirements.* The ZEV requirement for each manufacturer in 2003 and subsequent model years is that at least 10% of the PCs and LDT1s produced by the manufacturer and delivered for sale in California must be ZEVs, subject to the conditions in this section 1962(b). In applying the ZEV requirement, a PC or LDT1 that is produced by a small volume manufacturer, but is marketed in California by another manufacturer under the other manufacturer's nameplate, shall be treated as having been produced by the marketing manufacturer.

(1) *Basic Requirements for Large, Intermediate, and Small Volume Manufacturers.*

(A) *Large Volume Manufacturers.* In 2003 and subsequent model years, a large-volume manufacturer must meet at least 40% of its ZEV requirement with ZEVs, full ZEV allowance vehicles, or ZEV credits generated by such vehicles. The remainder of the large-volume manufacturer's ZEV requirement may be met using partial ZEV allowance vehicles or credits generated by such vehicles.

(B) *Intermediate Volume Manufacturers.* In 2003 and subsequent model years, an intermediate volume manufacturer may meet its ZEV requirement with up to 100 percent partial ZEV allowance vehicles or credits generated by such vehicles.

(C) *Small Volume Manufacturers.* A small volume manufacturer is not required to meet the percentage ZEV requirements. However, a small volume manufacturer may earn and market credits for the ZEVs or ZEV allowance vehicles it produces and delivers for sale in California.

(2) *Counting ZEVs and ZEV Allowance Vehicles in Fleet Average NMOG Calculations.* Vehicles certified as ZEVs and as full ZEV allowance vehicles shall be counted as ZEVs for the purpose of calculating a manufacturer's fleet average NMOG value and NMOG credits under sections 1960.1(g)(2) and 1961(b) and (c). Partial ZEV allowance vehicles shall be counted as SULEVs certified to the 150,000 mile standards for the purpose of calculating a manufacturer's fleet average NMOG value and NMOG credits under sections 1960.1(g)(2) and 1961(b) and (c).

(3) *Implementation Prior to 2003 Model Year.* Prior to the 2003 model year, a manufacturer that voluntarily produces vehicles meeting the ZEV emission standards applicable to 2003 and subsequent model year vehicles may certify the vehicles to those standards and requirements for purposes of calculating fleet average NMOG exhaust emission values and NMOG credits under sections 1960.1(g)(2) and 1961(b) and (c), and for calculating ZEV credits as set forth in section 1962(d).

(4) *Changes in Small and Intermediate Volume Manufacturer Status.* In 2003 and subsequent model years, if a small volume manufacturer's average California production volume exceeds 4,500 units of new PCs, LDTs, and MDVs based on the average number of vehicles produced and delivered for sale for the three previous consecutive model years, or if an intermediate volume manufacturer's average California production volume exceeds 35,000 units of new PCs, LDTs, and MDVs based on the average number of vehicles produced and delivered for sale for the three previous consecutive model years, the manufacturer shall no longer be treated as a small volume or intermediate manufacturer, as applicable, and shall comply with the ZEV requirements for intermediate or large volume manufacturers, as applicable, beginning with the fourth model year after the last of the three consecutive model years. If a manufacturer's average California production volume falls below 4,500 or 35,000 units of new

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PCs, LDTs, and MDVs, as applicable, based on the average number of vehicles produced and delivered for sale for the three previous consecutive model years, the manufacturer shall be treated as a small or intermediate volume manufacturer, as applicable, and shall be subject to the requirements for a small or intermediate volume manufacturer beginning with the next model year. In determining small volume manufacturer status, vehicles produced by one manufacturer and marketed in California by another manufacturer under the other manufacturer's nameplate shall be treated as part of the California production volume of the sales of the marketing manufacturer.

(c) Partial and Full ZEV Allowance Vehicles.

(1) This section 1962(c) sets forth the criteria for identifying vehicles delivered for sale in California as partial or full ZEV allowance vehicles. A partial ZEV allowance vehicle is a vehicle that is delivered for sale in California and that qualifies for a partial ZEV allowance of at least 0.2 but less than 1.0. A full ZEV allowance vehicle is a vehicle that is delivered for sale in California and that qualifies for a ZEV allowance of 1.0.

(2) *Baseline Partial ZEV Allowance.* In order for a vehicle to be eligible to receive a partial or full ZEV allowance, the manufacturer must demonstrate compliance with all of the following requirements. A qualifying vehicle will receive a baseline partial ZEV allowance of 0.2.

(A) Certify the vehicle to the 150,00-mile SULEV exhaust emission standards for PCs and LDTs in section 1961(a)(1);

(B) Certify the vehicle to the evaporative emission standards in section 1976(b)(1)(E) ("zero" evaporative emissions standards);

(C) Certify that the vehicle will meet the applicable on-board diagnostic requirements in section 1968.1 for 150,000 miles;

(D) Extend the performance and defects warranty period set forth in sections 2037(b)(2) and 2038(b)(2) to 15 years or 150,000 miles, whichever occurs first.

(3) Zero-Emission VMT Partial ZEV Allowance.

(A) A vehicle that meets the requirements of section 1962(c)(2) and has zero-emission vehicle miles traveled ("VMT") capability will generate an additional ZEV allowance, not to exceed 0.6, according to the following equation:

$$\text{Zero-Emission VMT Partial ZEV Allowance} = 0.6 \times \text{Zero-Emission VMT Factor}$$

where zero-emission VMT factor is the ratio of the zero-emission miles the vehicle travels to the total miles traveled per trip.

(B) The zero-emission VMT factor in the above equation is to be calculated as follows, with the urban all-electric range (AER) determined in accordance with section E.3.(2)(a) of the "California Exhaust Emission Standards and Test Procedures for 2003 and Subsequent Model Zero-Emission Vehicles, and 2001 and Subsequent Model Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," incorporated by reference in section 1962(e):

<i>Urban All-Electric Range</i>	<i>Zero-emission VMT Factors:</i>
< 20 miles	0.0
≤ 20 miles to < 100 miles	$(30 + [0.5 \times \text{Urban AER}]) / 80$
≥ 100 miles	1.0

(C) As an alternative to determining the zero-emission VMT factor in accordance with the preceding section 1962(c)(3)(B), a manufacturer may submit for Executive Officer approval an alternative procedure for determining the zero-emission VMT potential of the vehicle as a percent of total VMT, along with an engineering evaluation that adequately substantiates the zero-emission VMT determination. For example, an alternative procedure may provide that a vehicle with zero-emissions of one regulated pollutant (e.g. NOx) and not another (e.g. NMOG) will qualify for a zero-emission VMT factor of 0.5. Upon approval of the alternative procedure, the Executive Officer shall assign a zero-emission VMT factor not to exceed 1.0.

(D) The Executive Officer shall approve an additional 0.1 zero-emission VMT ZEV allowance for an HEV with an all-electric range greater than 20 miles if the manufacturer demonstrates to the reasonable satisfaction of the Executive Officer that the HEV is equipped with software and/or other strategies that would promote maximum use

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of off-vehicle charging, and that the strategies employed are reasonably reliable and tamper-proof. In no event, however, may the total zero-emission VMT ZEV allowance for an HEV under section 1962(c)(3) exceed 0.6.

(4) *Partial ZEV Allowance for Advanced ZEV Componentry.* A vehicle that does not qualify for any zero-emission VMT partial ZEV allowance under section 1962(c)(3) shall qualify for an advanced componentry partial ZEV allowance of 0.1, if the manufacturer demonstrates to the reasonable satisfaction of the Executive Officer that the vehicle is equipped with advanced ZEV componentry such as an advanced battery integral to the operation of the vehicle power-train or an electric power-train.

(5) *Partial ZEV Allowance for Fuel-Cycle Emissions.* A vehicle that uses fuel(s) with very low fuel-cycle emissions shall receive a partial ZEV allowance not to exceed 0.2. In order to receive the fuel-cycle partial ZEV allowance, a manufacturer must demonstrate to the Executive Officer, using peer-reviewed studies or other relevant information, that NMOG emissions associated with the fuel(s) used by the vehicle (on a grams/mile basis) are lower than or equal to 0.01 grams/mile. Fuel-cycle emissions must be calculated based on near-term production methods and infrastructure assumptions, and the uncertainty in the results must be quantified. The fuel-cycle partial ZEV allowance is calculated according to the following formula:

Partial ZEV Fuel Cycle Allowance = $0.2 \times [(\text{percent of VMT using fuel(s) meeting the requirements of the preceding paragraph}) / 100]$

A manufacturer's demonstration to the Executive Officer that a vehicle qualifies for a fuel-cycle partial ZEV allowance shall include test results and/or empirical data supporting the estimate of the relative proportion of VMT while operating on fuel(s) with very low fuel-cycle emissions.

(6) *Calculation of Combined ZEV Allowance for a Vehicle.* The combined ZEV allowance for a qualifying vehicle is the sum of:

(A) The baseline ZEV allowance of 0.2 for vehicles meeting the criteria in section 1962(c)(2);

(B) The zero-emission VMT ZEV allowance, if any, determined in accordance with section 1962(c)(3), not to exceed 0.6;

(C) The advanced ZEV componentry ZEV allowance, if any, determined in accordance with section 1962(c)(4), not to exceed 0.1; and

(D) The fuel-cycle emissions ZEV allowance, if any, determined in accordance with section 1962(c)(5), not to exceed 0.2.

(d) *Generation and Use of ZEV Credits; Calculation of Penalties.* A manufacturer that produces and delivers for sale in California ZEVs, full ZEV allowance vehicles, or partial ZEV allowance vehicles in a given model year exceeding the manufacturer's ZEV requirement set forth in section 1962(b) shall earn ZEV credits in accordance with this section 1962(d).

(1) *Qualification for ZEV Multipliers.*

(A) *1996-1998 Model-Year ZEV Multipliers.*

1. *1996-1998 Model-Year ZEV Multiplier Based on Vehicle Range.* 1996-1998 model-year ZEVs shall qualify for a ZEV multiplier based on vehicle range as follows:

ZEV Multiplier	Vehicle Range (miles)	
	Model Years 1996 and 1997	Model Year 1998
2	any	≥ 100
3	≥ 70	≥ 130

Range shall be determined in accordance with section 9.f.(2)(a) of the "California Exhaust Emission Standards and Test Procedures for 1988 Through 2000 Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles," incorporated by reference in section 1960.1(k).

2. *1996-1998 Model-Year ZEV Multiplier Based on Specific Energy of Battery.* 1996-1998 model-year ZEVs shall qualify for a ZEV multiplier based on specific energy of the battery as follows:

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<i>ZEV Multiplier</i>	<i>Specific Energy of Battery (w-hr/kg)</i>
2	any
3	≥ 40

3. A 1996-1998 model-year ZEV may qualify for a ZEV multiplier according to section 1962(d)(1)(A)1. or section 1962(d)(1)(A)2., but not both. For purposes of calculating a manufacturer's fleet average NMOG value under section 1960.1(g)(2), each ZEV that qualifies for a ZEV multiplier shall be counted as one vehicle.

(B) 1999-2007 Model-Year ZEV Multiplier Calculation for Extended Electric Range Vehicles.

1. Each ZEV and full ZEV allowance vehicle that is produced and delivered for sale in California in the 1999 to 2007 model years and that has an extended electric range shall qualify for a ZEV multiplier as follows:

<i>All-electric range</i>	<i>MY 1999-2000</i>	<i>MY 2001-2002</i>	<i>MY 2003-2005</i>	<i>MY 2006-2007</i>
100-175	6-10	4-6	2-4	1-2

ZEV multipliers under the above schedule will be determined by linear interpolation between the values shown in the above schedule. Range shall be determined in accordance with Section E.3.(2)(a) of the "California Exhaust Emission Standards and Test Procedures for 2003 and Subsequent Model Zero-Emission Vehicles, and 2001 and Subsequent Model Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," incorporated by reference in section 1962(e). ZEVs that have a refueling time of less than 10 minutes and a range of 100 miles or more shall be counted as having unlimited all-electric range, and shall consequently earn the maximum allowable ZEV multiplier for a specific model year. ZEVs that have a range of 80 to 99 miles shall qualify for ZEV multipliers in 1999-2002 model years in accordance with the following equation:

ZEV multiplier = (minimum allowable ZEV multiplier per above table for a model year) x (AER equivalent to a 10 minute recharge/100) x 0.5.

2. For purposes of calculating a manufacturer's fleet average NMOG value under sections 1960.1(g)(2) and 1961(b) and (c), each extended electric range ZEV shall be counted as one vehicle.

(2) *Effect of ZEV Multipliers.* In calculating the number of ZEVs and full ZEV allowance vehicles produced and delivered for sale in California by a manufacturer in a model year and the ZEV credits from such vehicles, the number of ZEVs and full ZEV allowance vehicles qualifying for a particular ZEV multiplier shall be multiplied by the ZEV multiplier.

(3) ZEV Credit Calculations.

(A) *Credits from ZEVs and Full ZEV Allowance Vehicles.* A full ZEV allowance vehicle shall be treated as a ZEV in calculating and applying ZEV credits. The amount of ZEV credits earned by a manufacturer in a given model year from ZEVs shall be expressed in units of g/mi NMOG, and shall be equal to the number of ZEVs produced and delivered for sale in California that the manufacturer applies towards meeting the ZEV requirements for the model year (at least 40% of the ZEV requirement for a large volume manufacturers) subtracted from the number of ZEVs produced and delivered for sale in California by the manufacturer in the model year and then multiplied by the NMOG fleet average requirement for PCs and LDT1s for that model year.

(B) *Credits from Partial ZEV Allowance Vehicles.* The amount of ZEV credits from partial ZEV allowance vehicles earned by a manufacturer in a given model year shall be expressed in units of g/mi NMOG, and shall be equal to the total number of ZEV allowances from partial ZEV allowance vehicles produced and delivered for sale in California that the manufacturer applies towards meeting its ZEV requirement for the model year (a number not to exceed 60% of the ZEV requirement for large volume manufacturers) subtracted from the total number of ZEV allowances from partial ZEV allowance vehicles produced and delivered for sale in California by the manufacturer in the model year and then multiplied by the NMOG fleet average requirement for PCs and LDT1s for that model year.

(C) The number of credits from a manufacturer's ZEVs and full ZEV allowance vehicles shall be maintained separately from the number of credits from the manufacturer's partial ZEV allowance vehicles.

(4) *ZEV Credits for MDVs and LDTs other than LDT1s.* ZEVs classified as MDVs or as LDTs other than LDT1s may be counted toward the ZEV requirement for PCs and LDT1s, and included in the calculation of ZEV credits as specified in this section 1962(d) if the manufacturer so designates.

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(5) *Submittal of ZEV Credits.* A manufacturer may meet the ZEV requirements in any given model year by submitting to the Executive Officer a commensurate amount of ZEV credits, consistent with section 1962(b). These credits may be earned previously by the manufacturer or acquired from another manufacturer. The amount of ZEV credits required to be submitted shall be calculated according to the criteria set forth in this section 1962(d).

(6) *Requirement to Make Up a ZEV Deficit.* A manufacturer that produces and delivers for sale in California fewer ZEVs than required in a given model year shall make up the deficit by the end of the next model year by submitting to the Executive Officer a commensurate amount of ZEV credits. The amount of ZEV credits required to be submitted shall be calculated by (A) adding the number of ZEVs produced and delivered for sale in California by the manufacturer for the model year to the number of ZEV allowances from partial ZEV allowance vehicles produced and delivered for sale in California by the manufacturer for the model year (not to exceed 60% of a large volume manufacturer's ZEV requirement), (B) subtracting that total from the number of ZEVs required to be produced and delivered for sale in California by the manufacturer for the model year, and (C) multiplying the resulting value by the fleet average requirements for PCs and LDT1s for the model year in which the deficit is incurred.

(7) *Penalty for Failure to Meet ZEV Requirements.* Any manufacturer that fails to produce and deliver for sale in California the required number of ZEVs or submit an appropriate amount of ZEV credits and does not make up ZEV deficits within the specified time period shall be subject to the Health and Safety Code section 43211 civil penalty applicable to a manufacturer that sells a new motor vehicle that does not meet the applicable emission standards adopted by the state board. The cause of action shall be deemed to accrue when the ZEV deficits are not balanced by the end of the specified time period. For the purposes of Health and Safety Code section 43211, the number of vehicles not meeting the state board's standards shall be calculated according to the following equation, provided that no more than 60% of a large volume manufacturer's ZEV requirement for a given model year may be satisfied with partial ZEV allowance vehicles or ZEV credits from such vehicles:

$$\frac{(\text{No. of ZEVs required to be produced and delivered for sale in California for the model year}) - (\text{No. of ZEVs produced and delivered for sale in California for the model year}) - (\text{No. of ZEV allowances from partial ZEV allowance vehicles produced and delivered for sale in California for the model year}) - [(\text{Amount of ZEV credits submitted for the model year}) / (\text{the fleet average requirement for PCs and LDT1s for the model year})]}{1}$$

(e) *Test Procedures.* The certification requirements and test procedures for determining compliance with the this section 1962 are set forth in "California Exhaust Emission Standards and Test Procedures for 2003 and Subsequent Model Zero-Emission Vehicles, and 2001 and Subsequent Model Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," adopted by the state board on August 5, 1999, which is incorporated herein by reference.

(f) *Abbreviations.* The following abbreviations are used in this section 1962:

"AER" means all-electric range.

"HEV" means hybrid-electric vehicle.

"LDT" means light-duty truck.

"LDT1" means a light-truck with a loaded vehicle weight of 0-3750 pounds.

"MDV" means medium-duty vehicle.

"Non-Methane Organic Gases" or "NMOG" means the total mass of oxygenated and non-oxygenated hydrocarbon emissions.

"NOx" means oxides of nitrogen.

"PC" means passenger car.

"SULEV" means super ultra-low-emission-vehicle.

"ULEV" means ultra-low emission vehicle.

"VMT" means vehicle miles traveled.

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43104 and 43105, Health and Safety Code. Reference: Sections 39002, 39003, 39667, 43000, 43009.5, 43013, 43018, 43100, 43101, 43101.5, 43102, 43104, 43105, 43106, 43107, 43204 and 43205.5, Health and Safety Code.

REFERENCE